### U.S. Department of the Interior • U.S. Geological Survey

## MINERAL INDUSTRY SURVEYS

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#### **MOLYBDENUM IN JULY 1997**

Domestic production of molybdenum in concentrate increased 9% in July 1997 compared with that of the previous month and was 23% more than in July 1996, according to the U.S. Geological Survey. Producer molybdenum stocks in concentrate, oxide, and other product forms were 8,250 metric tons at the beginning of 1997 and 9,660 metric tons at the end of July 1997.

Included in this Mineral Industry Surveys are U.S. production, shipments, and stocks of molybdenum concentrates and materials, plus U.S. consumption by end use of molybdenum in the previous and current months. Also included are trade data for the previous 2 months. During the current month, Platt's

Metals Week U.S. monthly average price for molybdenum concentrate was \$4.960 per kilogram (\$2.250 per pound). The average price for dealer molybdenum oxide was \$9.934 per kilogram (\$4.506 per pound) and that for dealer ferromolybdenum was \$11.904 per kilogram (\$5.400 per pound).

For the week ending September 15, 1997, Metals Week U.S. average price for molybdenum concentrate was \$4.960 per kilogram (\$2.250 per pound). The average price for dealer molybdenum oxide was \$9.479 per kilogram (\$4.300 per pound) and that for ferromolybdenum was \$11.794 per kilogram (\$5.350 per pound).

### ${\bf TABLE~1} \\ {\bf U.S.~SALIENT~MOLYBDENUM~CONCENTRATE~STATISTICS~~} 1/$

#### (Metric tons, contained molybdenum)

|               |         |         | 1997  |              |  |
|---------------|---------|---------|-------|--------------|--|
|               | 1996 p/ | June r/ | July  | Year to date |  |
| Production    | 56,000  | 4,390   | 4,800 | 36,100       |  |
| Shipments: 2/ |         |         |       |              |  |
| Domestic      | 16,100  | 943     | 1,070 | 7,720        |  |
| Export        | 19,700  | 1,600   | 1,430 | 11,800       |  |

p/ Preliminary. r/ Revised.

 ${\it TABLE~2} \\ {\it U.S. REPORTED PRODUCTION~AND~SHIPMENTS~OF~MOLYBDENUM~PRODUCTS~1/}}$ 

(Metric tons, contained molybdenum)

|                         |         |       | 1997  |              |  |
|-------------------------|---------|-------|-------|--------------|--|
|                         | 1996 p/ | June  | July  | Year to date |  |
| Gross production        | 46,300  | 2,380 | 2,340 | 26,100       |  |
| Internal consumption 2/ | 23,900  | 1,620 | 1,570 | 13,200       |  |
| Gross shipments         | 24,100  | 2,010 | 1,950 | 15,400       |  |

p/ Preliminary.

<sup>1/</sup> Data are rounded to three significant digits.

<sup>2/</sup> Includes molybdic oxides, metal powder, ammonium molybdate, sodium molybdate, and other.

<sup>1/</sup> Data are rounded to three significant digits.

<sup>2/</sup> Includes molybdic oxides, metal powder, ammonium molybdate, sodium molybdate, and other.

### ${\it TABLE~3}$ U.S. REPORTED CONSUMPTION, BY END USES, AND CONSUMER STOCKS OF MOLYBDENUM MATERIALS 1/ IN 1997

#### (Kilograms, contained molybdenum)

|  |             | Ferro    | Ammonium   | Molyb-      |          |           |
|--|-------------|----------|------------|-------------|----------|-----------|
|  | Molybdic    | molyb-   | and sodium | denum       |          |           |
| End use  | oxides      | denum 2/ | molybdate  | scrap       | Other    | Total     |
| June:  |             |          |            |             |          |           |
| Steel:   | _           |          |            |             |          |           |
| Carbon   | 42,800      | 27,700   |            |             | 3,190    | 73,700    |
| High-strength low-alloy                                  | 37,800      | 9,290    |            |             |          | 47,100    |
| Stainless and heat-resisting                             | 252,000     | 23,300   |            |             | 4,700    | 280,000   |
| Full alloy   | 201,000     | 178,000  |            |             | 2,330    | 381,000   |
| Tool   | 95,000      | 6,920    |            |             | 2,310    | 104,000   |
| Total  | 629,000     | 246,000  |            |             | 12,500   | 887,000   |
| Cast irons (gray, malleable, and ductile iron)           | 1,670       | 54,500   |            |             | 763      | 56,900    |
| Superalloys  | W           | W        |            | (3/)        | 74,500   | 74,500    |
| Alloys: (other than steels, cast irons, and superalloys) |             |          |            |             |          |           |
| Welding materials (structural and hard-facing)           |             | W        |            |             | 285 r/   | 285       |
| Other alloys 5/  |             | W        |            | (4/)        | 6,670 r/ | 6,670     |
| Mill products made from metal powder 6/                  |             |          |            | <del></del> | 134,000  | 134,000   |
| Cemented carbides and related products 7/                | <del></del> |          |            |             | 12       | 12        |
| Chemical and ceramic uses:                               | _           |          |            |             |          |           |
| Pigments   |             |          | 963        |             |          | 963       |
| Catalysts  | 77,300      |          | W          |             | 14,900   | 92,200    |
| Other 8/   |             |          |            |             | 2,660    | 2,660     |
| Miscellaneous and unspecified uses:                      | _           |          |            |             | 2,000    | 2,000     |
| Lubricants   |             |          |            |             | 11,100   | 11,100    |
| Other  | -<br>89,200 | 23,800   | 75,900     |             | 11,100   | 189,000   |
| Grand total  | 797,000     | 324,000  | 76,900     |             | 258,000  | 1,460,000 |
| Stocks, June 30,1997                                     | 576,000     | 205,000  | 11,100     | 45,200      | 813,000  | 1,650,000 |
| July:  |             | 203,000  | 11,100     | 43,200      | 613,000  | 1,030,000 |
| Steel:   | _           |          |            |             |          |           |
| Carbon   | 53,100      | W        |            |             | 3,190    | 56,200    |
| High-strength low-alloy                                  | 51,000      | 9,900    |            |             | 3,190    | 60,900    |
| Stainless and heat-resisting                             | _ 240,000   | 24,300   |            |             | 4,700    | 269,000   |
|  |             | 167,000  |            |             | ,        | ,         |
| Full alloy   | _ 163,000   |          |            |             | 2,330    | 332,000   |
| Tool   | 112,000     | 11,900   |            |             | 2,310    | 126,000   |
| Total  | _ 619,000   | 213,000  |            |             | 12,500   | 844,000   |
| Cast irons (gray, malleable, and ductile iron)           | _ 1,670     | 25,700   |            |             | 763      | 28,100    |
| Superalloys  | W           | 20,900   |            | (3/)        | 107,000  | 128,000   |
| Alloys: (other than steels, cast irons, and superalloys) | _           |          |            |             |          |           |
| Welding materials (structural and hard-facing)           |             | W        |            |             | 820      | 820       |
| Other alloys 5/  |             | 176      |            | (4/)        | 6,150    | 6,330     |
| Mill products made from metal powder 6/                  |             |          |            |             | 199,000  | 199,000   |
| Cemented carbides and related products 7/                | _           |          |            |             | 15       | 15        |
| Chemical and ceramic uses:                               | _           |          |            |             |          |           |
| Pigments   | _           |          | 712        |             |          | 712       |
| Catalysts  | 77,300      |          | W          |             | 14,900   | 92,200    |
| Other 8/   | W           |          |            |             | 2,660    | 2,660     |
| Miscellaneous and unspecified uses:                      | _           |          |            |             |          |           |
| Lubricants   | _           |          |            |             | 12,200   | 12,200    |
| Other  | 92,200      | 32,300   | 75,600     |             |          | 200,000   |
| Grand total  | 790,000     | 292,000  | 76,300     |             | 356,000  | 1,510,000 |
| Stocks, July 31,1997                                     | 584,000     | 235,000  | 11,100     | 34,700      | 814,000  | 1,680,000 |

r/Revised. W Withheld to avoid disclosing company proprietary data; included with "Other" of the "Miscellaneous and unspecified uses" category.

<sup>1/</sup> Data are rounded to three significant digits; may not add to totals shown.

<sup>2/</sup> Includes calcium molybdate.

<sup>3/</sup> Included in "Superalloys" of the "Other" category.

<sup>4/</sup> Included in "Other alloys" of the "Other" category.

<sup>5/</sup> Includes magnetic and nonferrous alloys.

<sup>6/</sup> Includes ingot, wire, rod, and sheet.

<sup>7/</sup> Includes construction, mining, oil and gas, metal working machinery.

<sup>8/</sup> Includes ground coat, glass, silicone, electroplating, and drier in paint or related uses.

# TABLE 4 U. S. EXPORTS OF MOLYBDENUM ORES AND CONCENTRATES (Including roasted concentrate), BY COUNTRY 1/

(Kilograms, contained molybdenum)

|                    |            | 1997      |           |              |
|--------------------|------------|-----------|-----------|--------------|
| Country            | 1996       | May       | June      | Year to date |
| Australia          | 60,900     | 5,530     | 16,400    | 52,300       |
| Belgium            | 12,400,000 | 1,670,000 | 1,580,000 | 9,300,000    |
| Brazil             | 20,400     |           | 32,100    | 32,400       |
| Canada             | 268,000    | 37,700    | 51,400    | 224,000      |
| Chile              | 6,990,000  | 425,000   | 358,000   | 3,100,000    |
| China              | 1,290,000  |           |           | 282,000      |
| France             | 5,620      | 60        | 83        | 143          |
| Germany            | 505,000    |           |           | 343,000      |
| India              | 58,600     |           |           |              |
| Italy              | 384,000    |           | 19,000    | 156,000      |
| Japan              | 5,140,000  | 574,000   | 415,000   | 3,450,000    |
| Korea, Republic of | 10,200     |           |           |              |
| Mexico             | 5,500,000  | 463,000   | 515,000   | 2,290,000    |
| Netherlands        | 5,890,000  | 1,780,000 | 1,120,000 | 10,200,000   |
| Spain              | 19,900     | 36,800    |           | 65,600       |
| Sweden             | 473,000    | 99,000    | 78,700    | 457,000      |
| United Kingdom     | 6,010,000  | 1,130,000 | 133,000   | 3,120,000    |
| Other              |            |           |           | 9,540        |
| Total              | 45,000,000 | 6,220,000 | 4,310,000 | 33,100,000   |

<sup>1/</sup> Data are rounded to three significant digits; may not add to totals shown.

Source: Bureau of the Census.

 ${\bf TABLE~5} \\ {\bf U.S.~EXPORTS~OF~FERROMOLYBDENUM,~BY~COUNTRY~1/}$ 

(Kilograms, contained molybdenum)

| Country            | 1996    | May    | June   | Year to date |
|--------------------|---------|--------|--------|--------------|
| Australia          |         | 273    | 273    | 546          |
| Canada             | 252,000 | 41,600 | 39,400 | 219,000      |
| China              |         |        |        | 130          |
| Italy              |         |        |        | 3,170        |
| Japan              | 117,000 | 4,510  | 5,630  | 23,000       |
| Korea, Republic of | 1,910   | 953    | 953    | 1,970        |
| Malaysia           | 37,200  |        |        |              |
| Mexico             | 117,000 | 5,130  | 15,800 | 71,400       |
| Singapore          | 53,900  |        |        |              |
| Spain              | 1,160   |        |        |              |
| Taiwan             |         | 1,970  | 1,040  | 6,560        |
| Venezuela          | 1,090   |        |        |              |
| Other              |         |        |        |              |
| Total              | 581,000 | 54,500 | 63,000 | 326,000      |

<sup>1/</sup> Data are rounded to three significant digits; may not add to totals shown.

Source: Bureau of the Census.

 $\label{table 6} TABLE~6$  U.S. IMPORTS FOR CONSUMPTION OF MOLYBDENUM PRODUCTS 1/

(Kilograms unless otherwise specified)

|                              |            | 1996            |                |              | 1997       |                |  |  |
|------------------------------|------------|-----------------|----------------|--------------|------------|----------------|--|--|
|                              | J          | anuary-December |                | January-June |            |                |  |  |
|                              | Gross      | Contained       | Value (c.i.f.) | Gross        | Contained  | Value (c.i.f.) |  |  |
| Material                     | weight     | molybdenum      | (thousands)    | weight       | molybdenum | (thousands)    |  |  |
| Ore and concentrates roasted | 8,090,000  | 5,460,000       | \$41,300,000   | 4,090,000    | 2,540,000  | \$24,800,000   |  |  |
| Ore and concentrates other   | 35,600     | 21,100          | 173,000        | 1,070,000    | 564,000    | 4,180,000      |  |  |
| Molybdenum chemicals:        |            |                 |                |              |            |                |  |  |
| Oxides and hydroxides        | 1,160,000  |                 | 8,850,000      | 907,000      |            | 7,150,000      |  |  |
| Molybdates of ammonium       | 665,000    | 368,000         | 5,360,000      | 450,000      | 226,000    | 3,590,000      |  |  |
| Molybdates (all others)      | 82,500     | 36,400          | 506,000        | 107,000      | 82,600     | 669,000        |  |  |
| Molybdenum orange            | 1,840,000  |                 | 5,710,000      | 811,000      |            | 2,730,000      |  |  |
| Mixtures of inorganic        |            |                 |                |              |            |                |  |  |
| compounds                    |            |                 |                |              |            |                |  |  |
| Ferromolybdenum              | 7,870,000  | 4,960,000       | 55,100,000     | 2,640,000    | 1,650,000  | 17,500,000     |  |  |
| Molybdenum powders           | 125,000    | 110,000         | 3,470,000      | 50,900       | 44,100     | 1,730,000      |  |  |
| Molybdenum unwrought         | 91,100     | 84,400          | 2,380,000      | 235,000      | 221,000    | 2,870,000      |  |  |
| Molybdenum waste and scrap   | 693,000    | 640,000         | 9,720,000      | 272,000      | 266,000    | 4,390,000      |  |  |
| Molybdenum wrought           |            |                 |                |              |            |                |  |  |
| Molybdenum wire              | 1,990      |                 | 320,000        | 1,340        |            | 180,000        |  |  |
| Molybdenum other             | 3,870      |                 | 1,060,000      | 3,530        |            | 556,000        |  |  |
| Total                        | 20,700,000 | 11,700,000      | 134,000,000    | 10,600,000   | 5,600,000  | 70,400,000     |  |  |

 $<sup>1/\,</sup>Data$  are rounded to three significant digits; may not add to totals shown.

Source: Bureau of the Census.